

PNS SCHOOL OF ENGG. & TECH., MARSHAGHAI
DEPARTMENT OF MECHANICAL ENGINEERING
LESSON PLAN
SUB: THERMAL ENGINEERING - 1 (3RD SEM)
NAME OF THE LECTURER: Er. RAMAKANTA SWAIN

CHAPTER	MONTH	DATE	TOPIC TO BE COVERED
THERMODYNAMIC CONCEPT & TERMINOLOGY	SEP	15.09.22	INTRODUCTION TO THERMAL ENGG. & THERMODYNAMICS
		16.06.22	THERMODYNAMIC SYSTEMS (CLOSED, OPEN, ISOLATED)
		19.09.22	THERMODYNAMIC PROPERTIES OF A SYSTEM (PRESSURE, VOLUME, TEMPERATURE, ENTROPY, ENTHALPY, INTERNAL ENERGY AND UNITS OF MEASUREMENT).
		20.09.22	INTENSIVE AND EXTENSIVE PROPERTIES
		21.09.22	THERMODYNAMIC PROCESSES, PATH, CYCLE, STATE, PATH FUNCTION, POINT FUNCTION
		22.09.22	THERMODYNAMIC EQUILIBRIUM
		23.09.22	QUASI-STATIC PROCESS,
		24.09.22	CONCEPTUAL EXPLANATION OF ENERGY AND ITS SOURCES
		26.09.22	WORK, HEAT AND COMPARISON BETWEEN THE TWO.
		27.09.22	MECHANICAL EQUIVALENT OF HEAT AND NUMERICALS
		28.09.22	WORK TRANSFER, DISPLACEMENT WORK AND DERIVATION
		29.09.22	NUMERICALS
	30.09.22	NUMERICALS IN WORK TRANSFER	
OCT	10.10.22	DOUBT CLEARING	
LAWS OF THERMODYNAMICS	OCT	11.10.22	ZEROth LAW OF THERMODYNAMICS.
		12.10.22	FIRST LAW OF THERMODYNAMICS.
		13.10.22	NUMERICALS ON FIRST LAW OF THERMODYNAMICS
		14.10.22	LIMITATIONS OF FIRST LAW OF THERMODYNAMICS, PMM- 1
		15.10.22	APPLICATION OF FIRST LAW OF THERMODYNAMICS (STEADY FLOW ENERGY EQUATION AND ITS APPLICATION TO TURBINE AND COMPRESSOR)
		18.10.22	CLASS TEST
		19.10.22	NUMERICALS ON STEADY FLOW ENERGY EQUATION FOR TURBINE AND COMPRESSOR
		20.10.22	SECOND LAW OF THERMODYNAMICS (CLAUSIUS & KELVIN PLANK STATEMENTS).
		21.10.22	APPLICATION OF SECOND LAW IN HEAT ENGINE, DETERMINATION OF EFFICIENCIES
		22.10.22	NUMERICALS ON HEAT ENGINE
		26.10.22	APPLICATION OF SECOND LAW IN HEAT PUMP, REFRIGERATOR & DETERMINATION OF C.O.P
		27.10.22	NUMERICALS ON HEAT PUMP AND REFRIGERATOR
	28.10.22	LIMITATIONS OF SECOND LAW OF THERMODYNAMICS, PMM-2	
29.10.22	DOUBT CLEARING		
PROPERTIES PROCESSES OF PERFECT GAS	OCT	31.10.22	LAWS OF PERFECT GAS: BOYLE'S LAW, CHARLE'S LAW, AVOGADRO'S LAW
		01.11.22	DALTON'S LAW OF PARTIAL PRESSURE, GUY LUSSAC LAW, GENERAL GAS EQUATION, CHARACTERISTIC GAS CONSTANT, UNIVERSAL GAS CONSTANT.
		02.11.22	SIMPLE NUMERICALS ON LAWS OF PERFECT GASES
		03.11.22	EXPLAIN SPECIFIC HEAT OF GAS (CP AND CV)
	NOV	04.11.22	DERIVATION OF RELATION BETWEEN CP & CV
		05.11.22	ENTHALPY OF A GAS, WORK DONE DURING A NON- FLOW PROCESS.
		09.11.22	APPLICATION OF FIRST LAW OF THERMODYNAMICS TO VARIOUS NON FLOW PROCESS (ISOTHERMAL, ISOBARIC, ISENTROPIC AND POLYTROPIC PROCESS)
		10.11.22	NUMERICALS ON WORKDONE
		11.11.22	FREE EXPANSION & THROTTLING PROCESS.
		12.11.22	DISCUSSION OF IMPORTANT QUESTIONS
14.11.22	DOUBT CLEARING		
INTERNAL		15.11.22	ENGINE AND CLASSIFICATION OF ENGINE AND I.C ENGINE
		17.11.22	TERMINOLOGY OF I.C ENGINE SUCH AS BORE, DEAD CENTERS, STROKE VOLUME, PISTON SPEED & RPM.
		18.11.22	CLASS TEST
		19.11.22	DIFFERENT COMPONENTS OF ENGINE AND THEIR FUNCTION

COMBUSTION ENGINE	NOV	21.11.22	WORKING PRINCIPLE OF 2-STROKE ENGINE BOTH C.I AND S.I TYPE
		22.11.22	WORKING PRINCIPLE OF 4-STROKE ENGINE(S.I TYPE)
		23.11.22	WORKING PRINCIPLE OF 4-STROKE ENGINE(C.I TYPE)
		24.11.22	DIFFERENTIATE BETWEEN 2-STROKE & 4- STROKE ENGINE C.I & S.I ENGINE.
		25.11.22	DISCUSSION OF IMPORTANT QUESTIONS
		26.11.22	DOUBT CLEARING
GAS POWER CYCLE	NOV	28.11.22	CARNOT CYCLE AND ITS EFFICENCY DERIVATION
		29.11.22	NUMERICALS ON CARNOT CYCLE
		30.11.22	NUMERICALS ON CARNOT CYCLE
		01.12.22	LIMITATIONS OF CARNOT CYCLE
		02.12.22	OTTO CYCLE AND ITS EFFICENCY DERIVATION
		03.12.22	NUMERICALS ON OTTO CYCLE
		05.12.22	NUMERICALS ON OTTO CYCLE
	DEC	06.12.22	DIESEL CYCLE AND ITS EFFICENCY DERIVATION
		07.12.22	NUMERICALS ON DIESEL CYCLE
		08.21.22	NUMERICALS ON DIESEL CYCLE
		09.12.22	DUAL CYCLE AND ITS EFFICENCY DERIVATION
		10.12.22	NUMERICALS ON DUAL CYCLE
		12.12.22	NUMERICALS ON DUAL CYCLE
		13.12.22	COMPARISON OF OTTO,DIESEL AND DUAL CYCLE
FUELS AND COMBUSTION	DEC	14.12.22	DOUBT CLEARING
		15.12.22	FUEL AND TYPES OF FUEL
		16.12.22	APPLICATION OF DIFFERENT TYPES OF FUEL.
		17.12.22	HEATING VALUES OF FUEL.
		19.12.22	QUALITY OF I.C ENGINE FUELS OCTANE NUMBER, CETANE NUMBER.
		20.12.22	ANALYSIS OF ENGINE
		21.12.22	CLASS TEST
22.12.22	DISCUSSION OF IMPORTANT QUESTIONS		

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